

IN THE CLAIMS:

Please write the claims to read as follows:

- 1 1. (Currently Amended) A method for failover of a first device to a second device in a storage network, the method comprising steps of:
 - 3 detecting a failure in the first device;
 - 4 initializing a second virtual port on an associated physical port of the second de-
5 vice, the second virtual port sharing its associated physical port with at least one other
6 virtual port;
 - 7 configuring the second virtual port with an identity of a first virtual port on a
8 physical port on the first device; and
 - 9 servicing a set of disks owned by the first device at the second device through the
10 second virtual port.
- 1 2. (Original) The method of claim 1 wherein the step of detecting a failure comprises the
2 step of detecting a lack of a heartbeat signal from the first device at the second device.
- 1 3. (Original) The method of claim 1 wherein the step of detecting a failure comprises the
2 step of initiating a failover command.
- 1 4. (Original) The method of claim 1 wherein the step of configuring the second virtual
2 port further comprises the steps of:
 - 3 setting a node name of the second virtual port to a node name of the first virtual
4 port; and

5 setting a port name of the second virtual port to a port name of the first virtual
6 port.

1 5. (Original) The method of claim 4 wherein the storage network comprises a Fibre
2 Channel (FC) network and wherein the node name comprises a FC World Wide Node
3 Name.

1 6. (Original) The method of claim 4 wherein the storage network comprises a Fibre
2 Channel (FC) network and wherein port name comprises a FC World Wide Port Name.

1 7. (Original) The method of claim 1 wherein the first device and second device are stor-
2 age systems.

1 8. (Original) The method of claim 1 further comprising the step of processing, by the
2 second device, data access requests directed to the second virtual port.

1 9. (Original) The method of claim 8 further comprising the step of processing, by the
2 second device, data access requests directed to a third virtual port, the third virtual port is
3 associated with a physical port.

1 10. (Original) The method of claim 9 wherein the second virtual port is associated with
2 the physical port.

1 11. (Original) The method of claim 1 wherein the second virtual port is associated with
2 one or more virtual ports associated with a physical port.

1 12. (Currently Amended) A storage system for use in a storage system cluster, the storage
2 system comprising:
3 a physical port adapted to communicate over a network;
4 ~~one or more~~a plurality of virtual ports associated with the physical port;
5 means for adapting one of the virtual ports to assume a network identity of a port
6 of a partner storage system in the storage system cluster, the adapted virtual port sharing
7 the physical port with at least one other virtual port;
8 means for acquiring control of a set of storage devices associated with the partner
9 storage system; and
10 means for servicing data access requests directed to the assumed network identity.

1 13. (Currently Amended) The storage system of claim ~~7-12~~, wherein the means for adapt-
2 ing one of the virtual ports to assume a network identity of a port of a partner storage sys-
3 tem in the network further comprises:
4 means for setting a node name associated with the one virtual port to a node name
5 of the port of the partner storage system in the storage system cluster; and
6 means for setting a port name of the one of the virtual ports to a port name of the
7 port of the second computer in the network.

1 14. (Original) The storage system of claim 13 wherein the node name comprises a Fibre
2 Channel World Wide Node Name.

1 15. (Original) The storage system of claim 13 wherein the port name comprises a Fibre
2 Channel World Wide Port Name.

1 16. (Original) The storage system of claim 12 wherein the port of the second computer
2 comprises a physical port.

1 17. (Original) The storage system of claim 12 wherein the port of the second computer
2 comprises a virtual port.

1 18. (Currently Amended) A computer readable medium, including program instructions
2 executing on a computer, the computer readable medium including instructions for per-
3 forming the steps of:

4 detecting, by a first device, a failure of a second device in a cluster;
5 initializing a first virtual port on a physical port on the first device, the first virtual
6 port sharing its associated physical port with at least one other virtual port, the first vir-
7 tual port being initialized with a network identity of the second device; and
8 assuming ownership, by the first device, of a set of storage devices associated
9 with the second device.

1 19. (Original) The computer readable medium of claim 18 wherein the step of initializing
2 the first virtual port further comprises the steps of:

3 setting a node name of the first virtual port to a node name associated with a port
4 on the second device; and

5 setting a port name of the first virtual port to a port name associated with a port on
6 the second device.

- 1 20. (Original) A storage system for use in a storage system cluster, the storage system
- 2 comprising:
 - 3 a physical port adapted to communicate over a network;
 - 4 a first virtual port associated with the physical port, the first virtual port adapted
 - 5 to accept data access requests directed to the storage system; and
 - 6 a second virtual port associated with the physical port, the second virtual port
 - 7 adapted to assume a network identity of a failed storage system.
- 1 21. (Original) The storage system of claim 20 wherein the second virtual port is further
- 2 adapted to process data access requests directed to the network identity of the failed stor-
- 3 age appliance.
- 1 22. (Original) The storage system of claim 20 wherein the second virtual port assumes
- 2 the network identity of the failed storage system by modifying a virtual port database en-
- 3 try.
- 1 23. (Original) The storage system of claim 22 wherein the virtual port database entry
- 2 comprises a node name field and a port name field.
- 1 24. (Original) The storage system of claim 23 wherein the node name field identifies a
- 2 Fibre Channel (FC) World Wide Node Name associated with the second virtual port.
- 1 25. (Original) The storage system of claim 23 wherein the port name field identifies a Fi-
- 2 bre Channel (FC) World Wide Port Name associated with the second virtual port.

1 26. (Currently Amended) A method, comprising:

2 detecting a failure in a first server by a second server, the first and second server
3 each having at least one physical port adapted to support ~~one-two~~ or more virtual ports
4 that share the at least one physical port, the first and second server having a primary vir-
5 tual port and a secondary virtual port accessible through the one or more physical ports;
6 activating the secondary virtual port on the second server;
7 configuring the secondary virtual port on the second server with an identity of the
8 primary virtual port on the failed first server; and
9 servicing one or more storage devices owned by the first server through the sec-
10 ondary virtual port on the second server.

1 27. (Previously Presented) The method of claim 26, wherein detecting the failure is in
2 response to initiating a failover procedure during a scheduled maintenance on the first
3 server.

1 28. (Previously Presented) The method of claim 26, wherein detecting a failure in the first
2 server further comprises: detecting a lack of a heartbeat signal from the first server at the
3 second sever.

1 29. (Previously Presented) The method of claim 26, further comprising:

2 determining that the first server has been recovered;
3 terminating service requests to the secondary virtual port on the second server di-
4 rected to the storage devices owned by the first server;
5 deactivating the secondary virtual port on the second server; and

6 servicing the storage devices owned by the first server through the primary virtual
7 port on the first server.

1 30. (Currently Amended) The method of claim 29, wherein determining that the first
2 server has been recovered is initiated by a client operation command.

1 31. (Currently Amended) A system comprising:

2 a first server having at least one physical port adapted to support ~~one or more virtual ports, the first server also having~~ a primary virtual port and a secondary virtual port,
3 ~~the secondary virtual port adapted to share a physical port with at least one other virtual port accessible through the one or more physical ports of the first server;~~

6 a second server having at least one physical port adapted to support ~~one or more virtual ports, the second server also having~~ a primary virtual port and a secondary virtual port,
7 ~~the secondary virtual port adapted to share a physical port with at least one other virtual port, accessible through the one or more physical ports of the second server,~~ the
8 second server configured to: (i) detect a failure of the first server, (ii) activate the secon-
9 dary virtual port on the second server, (iii) configure the secondary virtual port on the
10 second server with an identity of the primary virtual port on the failed first server, and
11 (iv) service one or more storage devices owned by the first server through the secondary
12 virtual port on the second server.

1 32. (Previously Presented) The system of claim 31, wherein the identity of the primary
2 virtual port on the first server comprises a node name and a port name.

1 33. (Previously Presented) The system of claim 32, wherein the node name comprises a
2 Fibre Channel World Wide Node Name.

1 34. (Previously Presented) The system of claim 32, wherein the port name comprises a
2 Fibre Channel World Wide Port Name.

1 35. (Currently Amended) A computer readable medium including program instructions
2 when executed operable to:

3 detect a failure in a first server by a second server, the first and second server each
4 ~~having at least one physical port adapted to support one or more virtual ports~~, the first
5 and second server having a primary virtual port and a secondary virtual port, the secon-
6 dary virtual port adapted to share a physical port with at least one other virtual port aeee-
7 sible through the one or more physical ports;

8 activate the secondary virtual port on the second server;

9 configure the secondary virtual port on the second server with an identity of the
10 primary virtual port on the failed first server; and

11 service one or more storage devices owned by the first server through the secon-
12 dary virtual port on the second server.

Please add the following new claims 36 *et seq.*:

1 36. (New) A method, comprising:

2 detecting a failure of a primary virtual port on a first physical port of a first server,
3 wherein the primary virtual port has an identity;

4 activating a secondary virtual port on a second physical port of the first server, the
5 second physical port adapted to support two or more virtual ports that share the second
6 physical port;

7 configuring the secondary virtual port with the identity of the failed primary vir-
8 tual port; and

9 servicing one or more storage devices owned by the first server through the sec-
10 ondary virtual port on the first server.

1 37. (New) The method of claim 36, wherein detecting the failure is in response to initiat-
2 ing a failover procedure during a scheduled maintenance on the first server.

1 38. (New) The method of claim 36, wherein detecting a failure in the first server further
2 comprises: detecting a lack of a heartbeat signal from the first server at a second server.

1 39. (New) The method of claim 36, further comprising:

2 determining that the primary virtual port has been recovered;
3 terminating service requests to the secondary virtual port;
4 deactivating the secondary virtual port; and
5 servicing the storage devices owned by the first server through the primary virtual
6 port.

1 40. (New) A computer readable medium including program instructions when executed
2 operable to:

3 detecting a failure of a primary virtual port on a first physical port of a first server,
4 wherein the primary virtual port has an identity;

5 activating a secondary virtual port on a second physical port of the first server, the
6 second physical port adapted to support two or more virtual ports that share the second
7 physical port;

8 configuring the secondary virtual port with the identity of the failed primary vir-
9 tual port; and
10 servicing one or more storage devices owned by the first server through the sec-
11 ondary virtual port on the first server.